

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-13. Cancelled.

14. (Currently Amended) A liquid chromatography sample injection system ~~for use with~~ comprising:

(a) a probe drive system of an automated liquid handler of wherein the type having a probe and a probe drive system for moving the probe relative to sample containers, said sample injection system comprising comprises an arm and a probe;

(b) an injector valve mounted upon on the arm of the probe drive system, and a;

(c) a conduit, wherein the conduit directly connecting connects the probe to said injector valve and the probe.

15-18. Cancelled.

19. (New) The liquid chromatography sample injection system of claim 14 further comprising:

(d) a sample analyzer connected to the injector valve.

20. (New) The liquid chromatography sample injection system of claim 19 further comprising

(e) a source of mobile phase, wherein the source of mobile phase is connected to the injector valve.

21. (New) The liquid chromatography sample injection system of claim 20 wherein the source of mobile phase comprises a pressurized liquid phase.
22. (New) The liquid chromatography sample injection system of claim 21 wherein a high pressure pump supplies the source of mobile phase to the injector valve.
23. (New) The liquid chromatography sample injection system of claim 14 wherein the sample analyzer comprises a liquid chromatography column.
24. (New) The liquid chromatography sample injection system of claim 23 wherein the sample analyzer further comprises a detector.
25. (New) The liquid chromatography sample injection system of claim 24 wherein the detector comprises an ion detector or a mass spectrometer.
26. (New) The liquid chromatography sample injection system of claim 14 further comprising a probe pump wherein the probe pump provides pressure to dispense and aspirate through the probe.
27. (New) The liquid chromatography sample injection system of claim 14 wherein the probe drive system comprises an X arm extending horizontally in an X direction; a Y arm slidably mounted on the X arm wherein the Y arm extends horizontally in a Y direction; and a Z arm slidably mounted on the Y arm wherein the Z arm extends vertically in a Z direction.
28. (New) The liquid chromatography sample injection system of claim 27 wherein the injector valve is mounted on the Z arm of the probe drive system.
29. (New) The liquid chromatography sample injection system of claim 14 wherein the injector valve is located within about 6 inches of a vertical axis of the probe.
30. (New) The liquid chromatography sample injection system of claim 14 wherein the conduit has a length of less than 12 inches.

31. (New) The liquid chromatography sample injection system of claim 14 wherein the injector valve alternates between a sample loading position and a sample injection position.

32. (New) The liquid chromatography sample injection system of claim 31 wherein an injection valve interface control module controls the alternation of the injector valve and a motor powers the alternation of the injector valve.

33. (New) The liquid chromatography sample injection system of claim 14 wherein the injector valve is a six port injection valve.

34. (New) The liquid chromatography sample injection system of claim 14 wherein the injector valve is a four port injector valve.

35. (New) The liquid chromatography sample injection system of claim 14 further comprising a source of dilutant.

36. (New) The liquid chromatography sample injection system of claim 14 further comprising a controller, wherein the controller operates the probe drive system.

37. (New) A liquid chromatography sample injection system comprising:
- (a) a probe drive system of an automated liquid handler; wherein the probe drive system comprises a probe and an arm;
  - (b) an injector valve mounted on the arm of the probe drive system; wherein the injector valve comprises a sample loop, a probe port, a mobile phase input port, a column output port and a probe pump port;
  - (c) a probe directly connected to the probe port;
  - (d) a sample analyzer connected to the column output port;
  - (e) a probe pump connected to the probe pump port; and
  - (f) a source of pressurized mobile phase connected to the mobile phase input port.

38. (New) A method of injecting a sample into a sample analyzer of a liquid chromatography sample injection system comprising:

- (a) placing an injection valve into a sample loading position, wherein the injection valve is mounted on an arm of a probe drive system of an automated liquid handler;
  - (b) aspirating a liquid sample through a probe of the probe drive system and into the injection valve;
  - (c) placing the injection valve into a sample injection position;
  - (d) entraining the liquid sample in the injection valve by addition of a mobile phase;
- and
- (e) injecting the entrained liquid sample into a sample analyzer.